



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,280	09/16/2003	Hirofumi Fujii	242588US3	9815

22850 7590 05/23/2005

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

VERSTEEG, STEVEN H

ART UNIT	PAPER NUMBER
----------	--------------

1753

DATE MAILED: 05/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,280

Applicant(s)

FUJII ET AL.

Examiner

Steven H. VerSteeg

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1,2,4-6 and 8 is/are rejected.
7) ☒ Claim(s) 3 and 7 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 16 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/16/04 & 4/6/04.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because item 53 points to two different items in Figure 12. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 1753

4. Claim 4 recites the limitation "the boundary portion" in line 2. There is insufficient antecedent basis for this limitation in the claim.

5. Claim 5 recites the limitation "the boundary portion" in line 3. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 6 depends from claim 5 and contains all of the limitations of claim 5. Therefore, claim 6 is rejected for the same reasons as claim 5.

7. Claim 6 recites the limitation "the tilt angle" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 5, 6, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 6-220,617 (JP '617).

10. For claim 1, Applicant requires a rod target for an arc evaporation source that has its outer peripheral surface as an evaporation surface wherein the opposite ends of the target in the longitudinal direction are formed thicker than the central part of the target.

11. JP '617 discloses a spent target 11 for an arc ion plating system [0002] in which the ends are thicker than the middle (Figure 3).

12. For claim 5, Applicant requires the thicker portions to gradually taper to the thinner portions. Figure 3 of JP '617 shows a tapered erosion area of the target surface.

Art Unit: 1753

13. For claim 6, Applicant requires the tilt angle of the taper portion to be set to be not less than 3 degrees nor more than 30 degrees.

14. The tilt of the erosion in Figure 3 is not discussed in JP '617. The tilt appears to be gradual in Figure 3. The target is used until it is consumed to a point of no use. At the beginning of use, there is no erosion. Thus, there is a point as the target erodes that it is within the 3-30 degree tilt angle.

15. For claim 8, Applicant requires an apparatus in which the target is located. JP '617 shows the apparatus (Figure 2).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 6-220617 (JP '617).

18. For claim 2, Applicant requires the length of the thicker portions on the target to be not less than 75 mm and not more than 200 mm in length.

19. JP '617 does not disclose the length of the thicker portions, but the thicker portions are in the area of the target that is at the cage ends of the target. Thus, the length of the cage would affect the length of the thicker portions. The cage is merely to hold the target for use and the size of it can be arbitrarily set to maximize the amount of usable target. The cage and thus the less

Art Unit: 1753

eroded ends are result effective variables because the larger the ends, the less target that can be used.

20. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the cage ends and thus the target ends be lot less than 75 mm and not more than 200 mm in length because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Allowable Subject Matter

21. Claim 4 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

22. Claims 3 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

23. The following is a statement of reasons for the indication of allowable subject matter: it is neither anticipated nor obvious over the prior art of record to have a rod target for an arc evaporation source as claimed by Applicant in claims 3 or 4. It is also neither anticipated nor obvious over the prior art of record to have a method for manufacturing the rod target of claim 1 as claimed in claim 7.

24. US 4,505,947 to Vukanovic et al. (Vukanovic) discloses a rod target that appears to be a uniform thickness and then tapers to a point at one end (Figures 3 & 4). The target thus is thin at an end and thicker at the middle and opposite end.

Art Unit: 1753

25. US 3,400,070 to Naff discloses an item in a plasma processing apparatus that would appear to show exactly the same structure claimed by Applicant (Figure 1) except that what appears to be the same as Applicant's invention is actually a coaxial passage for gas (see description for items 12 and 13).

26. In the IDS filed April 6, 2004, the international search report lists JP 52-95581 (JP '581) and JP 6-220617 (JP '617) as "X" references for claim 1 and 8. JP '581 does not read upon the instant invention because the abstract and figures do not suggest any thicker portion on the target.

27. JP '617 does not disclose or suggest the thicker portions to step down to the thinner portions or the ratio of the effective consumed area of the thicker portions to the thinner portions to be more than 1.0 and not more than 3.0. JP '617 instead appears to show that the consumed area of the thicker portions to the thinner portion would be below 1 because the thinner portions are consumed faster. Also, JP '617 makes the rod target with thicker portions and thinner portions use using the target, not by purposely assembling thicker and thinner portions into a target shape.

Information Disclosure Statement

28. The references crossed out on the IDS filed September 16, 2003 were not considered because they were not submitted in English.

General Information

For general status inquiries on applications not having received a first action on the merits, please contact the Technology Center 1700 receptionist at (571) 272-1700.

Art Unit: 1753

For inquiries involving Recovery of lost papers & cases, sending out missing papers, resetting shortened statutory periods, or for restarting the shortened statutory period for response, please contact Denis Boyd at (571) 272-0992.


For general inquiries such as fees, hours of operation, and employee location, please contact the Technology Center 1700 receptionist at (571) 272-1300.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. VerSteeg whose telephone number is (571) 272-1348. The examiner can normally be reached on Mon - Thurs (6:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Steven H VerSteeg
Primary Examiner
Art Unit 1753

shv
May 17, 2005